

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-001095**Date Inspected:** 15-Dec-2007**Project Name:** SAS Superstructure**OSM Arrival Time:** 1300**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 2330**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** Li Zhi Jiang**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG and Tower Mockups**Summary of Items Observed:**

Caltrans Quality Assurance (QA) Inspector Joe Lanz arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions during second shift. While on site the QA Inspector observed and/or discovered the following.

**Bay 2**

89 Meter Mockup Subassembly Skin A, Drawing MUSB-MA21:

The QA inspector periodically observed the ZPMC NDT technicians Li Li Ming, Xue Hai Rang and E Shui Lin perform ultrasonic testing of Skin A stiffener complete joint penetration welds 75mm plate ma21 to 70mm stiffeners mp503 (1) and mp504 (3), weld numbers 9, 10, 11 and 12. The ultrasonic testing (UT) was performed to verify the welds meet the requirements of the contract documents and AWS D1.5-2002. The welds and base metal were scanned utilizing a Epic models EPOC 3 and EPOC 4 for the following scans. The base metal lamination check was performed with a 1.0" dia. round 2.25 MHz transducer. The bottom quarter and middle half shear wave scan was performed with a 2.25 MHz transducer on a 70 degree angle wedge from face A and B. The top quarter shear wave scan was performed with a 2.25 MHz transducer on a 45 degree angle wedge from face A and B. The QA inspector noted that the QC NDT personnel did not mark the piece marks and the Y and X locations on the pieces tested as required by AWS D1.5-2002 paragraph 6.19.2. This issue was brought to the attention of QC inspector Zhang Tiadi and Caltrans METS Task Leader Mr. James Cochran. A Nonconformance Report (TL-15) was issued. No rejectable indications were reported by the ZPMC NDT technicians in accordance with AWS D1.5-2002 table 6.3. The testing appears to be in general compliance with AWS D1.5-2002 and contract documents with the exception of the issue noted above.

89 Meter Mockup Subassembly Skin D:

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The QA inspector performed magnetic particle testing (MT) and visual inspection verification of skin plate mp513 to stiffeners mp535, mp536, mp537 and mp538 weld numbers 1, 2, 7, 8, 11, 12, 13 and 14. The welds were examined using magnetic particle AC/DC yoke for 10 % of the weld length and 100% of the weld terminations. The QA inspector noted that no relevant indications were discovered during magnetic particle testing. The QA inspector did not concur with the QC/NDT inspector's assessment. Work was completed on this date and appears to be in general compliance with contract documents and AWS D1.5-96. A magnetic Particle Testing Report (TL-6028) for welds that were tested in accordance with AWS D1.5-96 and contract requirements was generated on this date.

### 89 Meter Mockup Subassembly Skin E:

The QA inspector performed magnetic particle testing (MT) of skin plate mp502-4 to doubler plate ma38-1 as shown on drawing MUSB-SA215, weld numbers 1, 2, 3 and 4 root pass. The welds were examined using magnetic particle AC/DC yoke for 10 % of the weld length. The QA inspector noted that no relevant indications were discovered during magnetic particle testing. The QA inspector did concur with the QC/NDT inspector's assessment. Work was completed on this date and appears to be in general compliance with contract documents and AWS D1.5-96. A magnetic Particle Testing Report (TL-6028) for welds that were tested in accordance with AWS D1.5-96 and contract requirements was generated on this date.

### Bay 4

#### Floor plates

The QA inspector performed magnetic particle testing (MT) and visual inspection verification of floor plates SP065, SP071 and SP009 skin plates to T stiffeners weld numbers 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24. The welds were examined using magnetic particle AC/DC yoke for 10 % of the weld length and 50% of the weld terminations. The QA inspector did not concur with the QC/NDT inspector's assessment. The following rejectable indications were observed.

- a) SP065-01-014, magnetic particle linear indication at the Y location of 400mm with a length of 10mm. The indication appeared to be incomplete fusion at the toe of the weld.
- b) SP065-01-016, visual indication at the Y location of 0mm with a length of 15mm and a depth of 2mm. The indication appeared to be undercut at the toe of the weld termination.
- c) SP065-01-022, magnetic particle linear indication at the Y location of 200mm with a length of 180mm. The indication appeared to be incomplete fusion at the toe of the weld.
- d) SP071-01-016, magnetic particle linear indication at the Y location of 0mm with a length of 300mm. The indication appeared to be incomplete fusion at the toe of the weld.
- e) SP071-01-020, magnetic particle linear indication at the Y location of 230mm with a length of 75mm. The indication appeared to be incomplete fusion at the toe of the weld.

The above indications were brought to the attention of ZPMC personnel Ken Zang working in the bay at the time. The indications were verified by ZPMC QC CWI Xu Xian Ping. The magnetic particle indications were removed by grinding. After the grinding was complete the welds were examined by magnetic particle testing. No relevant indications were observed. The undercut on weld SP065-01-016 was not repaired at this time.

The above issues were reviewed with Caltrans METS Task Leader Mr. James Cochran and METS recommends this issue to be addressed in a NCR.

Work was not completed on this date and a magnetic Particle Testing Report (TL-6028) for welds that were tested in accordance with AWS D1.5-96 and contract requirements was generated on this date.

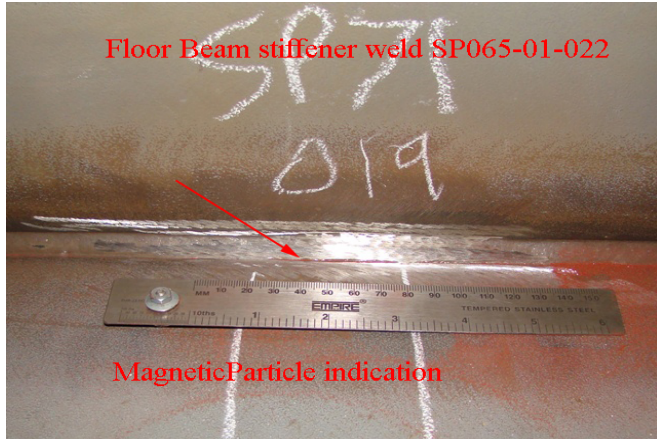
The following digital photographs below illustrate the indications observed on the floor beam stiffeners.

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### Summary of Conversations:

Relevant conversations are referenced above.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Lanz,Joe	Quality Assurance Inspector
<b>Reviewed By:</b>	Cochran,Jim	QA Reviewer

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